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(Phytopathology **2**:135–137. *pl. 12.* 1912) describes and illustrates a new fungus (*Gibellula suffulta*), found on an unidentified species of spider at Wiamea, Hawaii.—P. C. STANDLEY (Proc. Biol. Soc. Wash. **25**:119, 120. 1912) proposes a new genus (*Wootonella*), based on *Ximenesia encelioides* var. *nana* Gray.—F. STEPHANI (Sp. Hep. **4**:801–824. 1912) has issued title-page and index to volume 4, and (*ibid* **5**: 1–176) continues the record of species, many of which are new to science.—H. and P. SYDOW (Leafl. Philipp. Bot. **5**:1133–1147. 1912) have published 24 new species of fungi from the Island of Palawan, P.I., and include the following new genera: *Nematothecium* of the Perisporiaceae and *Discosiella*, a genus related to *Discosia*.—F. THEISSEN (Beih. Bot. Centralbl. **29**:45–73. 1912) under the title "Zur Revision der Gattung *Dimerosporium*" characterizes a new genus (*Dichothrix*) of the Eurotiaceae.—W. WEINGART (Monatsschr. für Kakteenk. **22**:83, 84. 1912) has described a new species of *Echinocereus* (*E. Weinbergii*) introduced into cultivation from North America, and (*ibid.* 106–109) a new species of *Cereus* (*C. Vaupelii*) from Haiti.—H. F. WERNHAM (Journ. Bot. **50**:156–164. 1912) presents a revision of the genus *Bertiera*, recognizing 33 species of which 5 are new to science.—K. M. WIEGAND (Rhodora **14**:117–161. *pls. 95, 96.* 1912) presents an interesting and thorough revision of the genus *Amelanchier* in eastern North America, recognizing 8 species of which 3 are characterized as new. The revision is of particular value on account of a clear key to the species and full citation of exsiccatae.—W. ZEH (Notizblatt **5**:268–273. 1912) has described several new species in the genus *Liagora* and includes one from California, one from Guadeloupe, and one from Brazil.—J. M. GREENMAN.

**Periodicity of tropical vegetation.**—On account of the abundance of its data, VOLKENS'[9] report on the results of his observations in Java, 1901–1902, is perhaps the most valuable of a series of recent articles upon the problems and conditions of foliar periodicity in the tropics. Exact records of the behavior of individual trees of over 100 species growing in the Buitenzorg Gardens show almost all possible variations of foliage conditions, from trees regularly deciduous once or twice a year, through evergreens with marked periodicity, to others with uniform foliage gradually renewed throughout the entire year. Attention is directed to the marked individuality not only of species and of individual trees of the same species, but also of individuals of different ages, and even of different branches of the same tree. VOLKENS shows that a moderate amount of climatic periodicity exists at Buitenzorg, especially in precipitation, relative humidity, and insolation; also that a large majority of the trees show a definite foliar periodicity, but concludes that no coincidence or causal connection can be established between the two classes of phenomena. He rejects as most improbable the influence of the salt content of the soil water, and abandons the hypothesis that leaf-fall is due to an excess of stored food checking the activity of the leaf by preventing the removal of the products of photosynthesis. He finds the final cause of leaf-removal and leaf-renewal in the inherited, internal, unknown attributes of the protoplasm. He confesses that all his efforts to arrive at any explanation of these internal causes have been fruitless. External factors modify the action of these primary causes, but in a comparatively uniform climate like that of Java the modification is slight.

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[9] VOLKENS, G., Laubfall und Lauberneuerung in den Tropen. 8vo, pp. 142. Berlin: Gebrüder Borntraeger. 1912. *M* 3.80.

VOLKENS also reviews the work of WRIGHT[10] and others upon deciduous trees, and that of SMITH[11] which affords some data for certain evergreen species in Ceylon, and finds them in accord with his own observations.

In attempts to interrupt the regularity of leaf-fall, DINGLER[12] in Ceylon and KLEBS[13] in Java removed all the leaves from individuals of various species a few months before their regular time of shedding, and obtained a prompt renewal of the foliage and its persistence throughout the period in which they were usually leafless. DINGLER sees in this a proof of the efficiency of the inner cause in disregarding external conditions, while KLEBS, on the contrary, regards it as a response to external factors proving that a rest period is not required. Both these investigators have studied the behavior of deciduous European trees in the tropics, DINGLER[14] at a mountain station in Ceylon, and KLEBS at Tjibodas, Java, and found the usual European habit largely abandoned, new foliage and flowers being often produced twice in the year, while many species never became entirely leafless. Several resembled tropical species in having at one and the same time branches in full foliage, with bursting buds and in leafless condition, respectively. From these and many other experimental studies KLEBS reaches the general conclusion that periodicity of plant life is conditioned by periodicity of external factors.

In a more recent paper[15] KLEBS takes exception to VOLKENS' statement that tropical vegetation in Java is mainly periodic, claiming that when all the constituents of the forests about Buitenzorg and Tjibodas are considered, there is comparatively little periodicity. By a series of experimental cultures, carried on partly in Java and partly in the greenhouses at Heidelberg with tropical trees of periodic habit, he has succeeded, by varying the fertility of the soil, in obtaining varying responses from the same species and in greatly prolonging the period of continuous growth. This leads him to conclude that periodicity may be conditioned by the supply of food materials. He also calls attention to the fact that in attempts to relate periodicity to external factors only the more obvious climatic conditions have been considered, and that our data consist largely of comparatively crude observations. More exact studies upon an experimental basis are required. He concludes that the idea of a general primary rhythm in tropical plants, as advanced by SCHIMPER and now supported by VOLKENS and others, is contradicted by one series of facts, is rendered doubtful by other facts, and is supported only by such observations as up to the present time it has been impossible to subject to a searching physiological examination.—GEO. D. FULLER.

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[10] WRIGHT, H., Foliar periodicity of endemic and indigenous trees in Ceylon. Ann. Roy. Bot. Gard. Peradeniya **2**:415–516. 1905.

[11] SMITH, A. M., On the internal temperature of leaves in tropical insolation; also observations on the periodicity of the appearance of young colored leaves of trees growing in Peradeniya. Ann. Roy. Gard. Peradeniya **4**:229–298. 1909.

[12] DINGLER, H., Versuche über die Periodizität einiger Holzgewächse in den Tropen. Sitz. K. Bay. Akad. Wiss. München. pp. 127–143. 1911.

[13] KLEBS, G., Über die Rhythmik in der Entwicklung der Pflanzen. Sitz. Heidelberger Akad. Wiss. Abh. 23. 1911.

[14] DINGLER, H., Über Periodizität sommergünen Bäume Mitteleuropas in Gebirgsklima Ceylons. Sitz. K. Bay. Akad. Wiss. München. pp. 217–247. 1911.

[15] KLEBS, G., Über die periodischen Erscheinungen tropischer Pflanzen. Biol. Centralbl. **32**:257–285. 1912.

**Paleobotanical notes.**—WHERRY[16] has described three types of fossil wood from the Trias of Pennyslvania. The first, *Araucarioxylon virginianum* Knowlton, has been found previously in North Carolina, Virginia, and Connecticut. The second, *A. vanartsdaleni*, is separated as a new species on the lower medullary rays and predominance of uniserial pitting of the tracheids. The third is referred to the genus *Brachyoxylon* Hollick and Jeffrey, under the name of *B. pennsylvanicum*, because the pits, when uniserial, are usually scattered and circular, and when biseriate are either "distant and sub-opposite" or "alternate and hexagonal." This identification seems hardly justified, for the pits in *Brachyoxylon*, when double, are always alternate and closely compressed. Moreover, the most important diagnostic feature of that genus is the formation of traumatic resin canals. Without this reaction, WHERRY cannot properly refer his specimen to the genus *Brachyoxylon*.

In a second paper,[17] WHERRY discusses the evidence supporting the suggestion that the so-called "New Red" may represent deposits from the Lower Carboniferous to the Jurassic, and concludes that while there are no grounds for referring any of these beds to the Paleozoic, the absence of distinctive fossils except those of the Keuper type leaves it an open question whether there may not be also Bunter below and Jurassic above.—R. S. HOLDEN.

**Earliest European angiosperms.**—Dr. STOPES has described[18] three new genera from the lower Greensand of England, representing the earliest structurally known European angiosperms. The first, *Aptiana radiata*, has vessels

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[16] WHERRY, EDGAR T., Silicified wood from the Triassic of Pennsylvania.

[17] ———, Age and correlation of the "New Red" or Newark Group of Pennsylvania.

[18] STOPES, MARIE C., Petrifactions of the earliest European angiosperms. Phil. Trans. Roy. Soc. London B **203**:75–100. *pls. 6–8.* 1912.